

NON-PUBLIC?: N
ACCESSION #: 8711130307
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Beaver Valley Power Station Unit 2 PAGE: 1 of 3

DOCKET NUMBER: 05000412

TITLE: Reactor Trip due to 'A' Steam Generator, Low Level coincident with
steam flow/feed flow mismatch
EVENT DATE: 10/08/87 LER #: 87-026-00 REPORT DATE: 11/09/87

OPERATING MODE: 1 POWER LEVEL: 055

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: William S. Lacey, Plant Manager TELEPHONE #: 412-643-1258

COMPONENT FAILURE DESCRIPTION:
CAUSE: B SYSTEM: SJ COMPONENT: FIX MANUFACTURER: B080
REPORTABLE TO NPRDS: N

SUPPLEMENTAL REPORT EXPECTED: No

ABSTRACT: On 10/8/87, with the unit at 55% reactor power, the 'A' Main Feed Pump was removed from service to permit Testing Group to obtain single pump operation data on the 'B' Main Feed Pump. Approximately 5 seconds later, Steam Generator (SG) Feed Pump Recirculation Valve (2FWR-FCV150B) opened followed by the SG Feed Pump Recirculation Valve (2FWR-FCV150A). The 'A' Main Feed Pump was restarted and subsequently both SG Recirculation Valves closed. SG 'A' and 'C' Main Feed Regulating Valves began to oscillate. Since the narrow range SG 'A' Water Level Channel (2FWS-L475) had been declared out of service and its bistables tripped, the feed flow swing on the 'A' SG resulted in a Feed Flow/Steam Flow Mismatch with SG 'A' Low Level Reactor Trip.

Maintenance discovered the piping to the 'B' Main Feed Pump suction flow indicating switches was reversed. This caused both Main Feed Pumps Recirculation Valves to open when the 'A' Main Feed Pump was secured. The Main Feed Regulation Valves over responded causing them to swing full range.

The piping error was corrected and the gain on the Main Feed Reg. Valves

adjusted.

There were no safety implications. The reactor tripped as designed and the Auxiliary Feed Pumps started.

(End of Abstract)

TEXT: PAGE: 2 of 3

On 10/8/87, with the unit at 55% reactor power, the Steam Generator's levels were being controlled as follows:

Steam Bypass Feedwater
Generator Main Feed Reg. Valve Control Valve

A (2FWS*478) in AUTO (2FWS*479) in MANUAL at 5%

B (2FWS*488) in MANUAL at 41% (2FWS*489) in AUTO at 43%

C (2FWS*498) in AUTO (2FWS*499) in MANUAL at 5%

'A' Steam Generator Level Transmitter (2FWS*LT475) had been declared out of service and its bistables placed in the tripped position due to the performance of its Maintenance Surveillance Procedure. At 1816 hours, preparations were begun to secure the 'A' Main Feed Pump (2FWS*P21A) to permit the Testing Group to obtain single pump operation data on the 'B' Main Feed Pump (2FWS*P21B). The 'B' Steam Generator level was raised to 50%. This was done in anticipation of a Feedwater transient expected when the 'A' Main Feed Pump was shutdown. The transient was anticipated to be worse on the 'B' Steam Generator than on the others due to the fact that the 'B' Steam Generator level was being controlled with both Bypass Feedwater Control Valve and Main Feedwater Control Valve. The other generator levels were being controlled with their Main Feedwater Regulating Valves only. These Main Feedwater Regulating Valves are faster acting than the Bypass valves.

(2FWS*P21A) was secured and subsequently feedwater flow to the 'B' Steam Generator began to decrease. 'B' Steam Generator Bypass Feedwater Control Valve opened to the 100% demand position and the 'B' Main Feed Regulating Valve was at approximately 55%, however, the 'B' Steam Generator level continued to decrease. Approximately 5 seconds later, SG Feed Pump Recirculation Valve (2FWR-FCV150B) opened followed by the SG Feed Pump Recirculation Valve (2FWR-FCV150A). (2FWS*P21A) was restarted and subsequently both SG Feed Pump Recirculation Valves (2FWR-150A and B) valves closed. SG 'A' and 'C' Main Feed Regulating Valves demand signal began to swing from 0% to 100%. Since (2FWS-LT475) had been declared out of service and its bistables tripped, the feed flow swing on the 'A' SG resulted in a

Feed Flow/Steam Flow Mismatch with SG 'A' Low Level Reactor Trip.

This event resulted from the decrease in feedwater flow and the over responsiveness of the Main Feed Regulating Valves. A subsequent investigation revealed that the tubing to the flow indicating switches on the suction of the 'B' Main Feed Pump had

TEXT: PAGE: 3 of 3

been reversed. These flow indicating switches work in conjunction with the 'A' Main Feed Pump suction flow indicating switches to control the Main Feed Pumps Recirculation Valves. This piping error resulted in both Main Feed Pump Recirculation Valves opening when the 'A' Main Feed Pump was secured. The flow indicating switches were installed under an Engineering and Design Coordination Report. During Phase II testing, it was discovered that flow switches (2CNM-FIS150A, 151A, 152A) were piped to (2CNM-FE150B) and flow switches (2CNM-FIS150B, 151B, 152B) were piped to (2CNM-FE150A). A Post Turnover Work Authorization Request (WAR) was issued to rework the tubing. On completion of the WAR (8/11/87) an inspector walked down the piping but failed to notice the error.

The piping error was corrected and the Main Feed Regulating valves adjusted. The reactor was returned to criticality and the plant to 30% power on 10/9/87.

The feed flow swing on the 'A' SG resulted in a Steam Flow/Feed Flow Mismatch. Since SG 'A' level channel (FWS-L475) had been declared out of service and its bistables tripped, the Reactor Protection System functioned as designed and tripped the reactor on SG Low Level Coincident With Steam Flow/Feed Flow Mismatch. Following the reactor trip, lo lo levels occurred in all Steam Generators and all three Auxiliary Feedwater Pumps started. The Control Room operators stabilized the reactor in Hot Standby in accordance with Emergency Operating Procedure E-O, "Reactor Trip or Safety Injection".

Both Main Feed Pumps were secured and Steam Generator levels recovered using auxiliary feedwater.

Since the Reactor Protection System (RPS) along with the Engineered Safety Equipment (ESF) actuated at the proper setpoints and within the required time frame no safety implications resulted. The Reactor Trip due to Lo Steam Generator level coincident with Feed Flow/Steam Flow Mismatch is covered within the Loss of Feedwater analysis (Beaver Valley Unit 2 FSAR Section 15.2.7).

LER 2-87-023 describes a similar trip (Low Steam Generator Level Coincident With Steam Flow/Feed Flow Mismatch).

ATTACHMENT # 1 TO ANO # 8711130307 PAGE: 1 of 2

Duquesne Light Telephone (412) 393-6000

Nuclear Group
P.O. Box 4
Shippingport, PA 15077-0004

November 9, 1987
ND3SPM:0076

Beaver Valley Power Station, Unit No. 2
Docket No. 50-412, License No. NPF-73
LER 87-026-00

United States Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with Appendix A, Beaver Valley Technical Specifications, the following Licensee Event Report is submitted:

LER 87-026-00, 10 CFR 50.73.a.2.iv, "Reactor Trip Due to Steam Generator 'A' Low Level Coincident with Steam Flow/Feed Flow Mismatch".

Very truly yours,

/s/ Wm. S. Lacey
Wm. S. Lacey
Plant Manager

tlu

Attachment

ATTACHMENT # 1 TO ANO # 8711130307 PAGE: 2 of 2

November 9, 1987
ND3SPM:0076
Page two

cc: Mr. William T. Russell
Regional Administrator

United States Nuclear Regulatory Commission
Region 1
King of Prussia, PA 19406

C. A. Roteck, Ohio Edison

Mr. Peter Tam, BVPS Licensing Project Manager
United States Nuclear Regulatory Commission
Washington, DC 20555

J. Beall, Nuclear Regulatory Commission,
BVPS Senior Resident Inspector

Mr. Alex Timme, CAPCO Nuclear Projects Coordinator
Toledo Edison

INPO Records Center
Suite 1500
1100 Circle 75 Parkway
Atlanta, GA 30339

G. E. Muckle, Factory Mutual Engineering, Pittsburgh

Mr. J. N. Steinmetz, Operating Plant Projects Manager
Mid Atlantic Area
Westinghouse Electric Corporation
Energy Systems Service Division
Box 355
Pittsburgh, PA 15230

American Nuclear Insurers
c/o Dottie Sherman, ANI Library
The Exchange Suite 245
270 Farmington Avenue
Farmington, CT 06032

*** END OF DOCUMENT ***
